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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,039	02/16/2001	Kuang-Chih Liu	3722-0101P	2526

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EXAMINER	
PHILLIPS, HASSAN A	

ART UNIT	PAPER NUMBER
2151	2

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/784,039	LIU, KUANG-CHIH	
	Examiner	Art Unit	
	Hassan Phillips	2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 February 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-12, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lawler et al. (hereinafter Lawler), U.S. patent 5,978,951, in view of Merchant et al. (hereinafter Merchant), U.S. patent 6,732,184.

3. In considering claim 1, Lawler teaches a hash architecture for a network device, comprising:

a) A hashing mechanism for generating a hash index in response to a network address of an incoming packet, (col. 2, lines 20-23);

b) An address lookup table for recording network address information and generating an associated output port for the incoming packet in response to the hash index, (col. 1, lines 31-38);

c) A validity table 108, for storing valid bit information for each directory entry of the address lookup table, (col. 7, lines 5-6);

d) A translating/comparing mechanism 118 coupled to the validity table for obtaining a local best-fit directory entry in the address lookup table by continuously translating and comparing each directory entry of the validity table according to a predetermined format, (col. 8, lines 57-67, col. 9, lines 1-5).

Although the hash architecture disclosed by Lawler shows substantial features of the claimed invention, it fails to expressly disclose:

a) A compensation directory for storing the local best-fit directory entry.

Nevertheless, in a similar field of endeavor, Merchant teaches a system for managing address table overflow comprising:

a) A mechanism for storing local heavily used addresses, (col. 8, lines 33-47).

Given the teachings of Merchant, it would have been obvious to one of ordinary skill in the art to modify the teachings of Lawler to show a compensation directory coupled to the translating/comparing mechanism for storing the local best-fit directory entry output from the translating/comparing mechanism. This would enhance the teachings of Lawler by showing a means for improving hit rate, and solving problems such as collision, and overflow during the network address learning process, Merchant, col. 12, lines 36-54.

4. In considering claim 2, Lawler further teaches receiving valid bit input and an address of a valid directory entry of a set and generating an output in accordance with a

predetermined format. The predetermined format having means for providing an address field for storing an address of a directory entry of a set, a counter field for indicating the number of valid directory entries of a set mapped by the address stored in the address field, a selection field for indicating the order of the leftmost "1" of a valid directory entry mapped by the address stored in the address field, and a source field for indicating the provider of the address stored in the address field. See Lawler, col. 5, lines 14-57. Although, Lawler does not expressly disclose a compensation field for indicating if an address stored in the address field can be provided for a compensation directory, combined with Merchant, it would have been obvious to a person of ordinary skill in the art to modify Lawler to teach a compensation field for indicating if an address field can be provided for a compensation directory. The motivation to combine Lawler and Merchant would be the same as that indicated in consideration of claim 1.

5. In considering claim 3, Merchant teaches the compensation directory comprising a plurality of directory entries and associated network address for indexing the address lookup table. See col. 11, lines 19-36. The motivation to combine Merchant with Lawler would be the same as that indicated in consideration of claim 1.

6. In considering claim 4, Lawler teaches the valid bit information of the validity table being at least 1 bit. See col. 6, lines 61-67.

7. In considering claim 5, Merchant teaches the compensation directory performing an aging out process. See col. 9, lines 20-25. The motivation to combine Merchant with Lawler would be the same as that indicated in consideration of claim 1.

8. In considering claim 6, Lawler provides a means for the address lookup table to periodically perform an aging out process on any directory entry that is currently not indexed by the compensation directory. See col. 4, lines 34-44.

9. In considering claim 7, Lawler provides a means for the valid bit information of the validity table to be two-bit for representing the statuses of not-compensated, idle, compensated steeling, and compensated occupied. See col. 6, lines 61-67.

10. In considering claim 8, Lawler teaches a network device having a hash architecture, and a method for looking up an address lookup table comprising the steps of:

a) Generating a hash index in response to a network address of an incoming packet, (col. 2, lines 20-23);

b) Using the hash index to lookup an address lookup table and cause the address lookup table to output an associated output port for forwarding the incoming packet, (col. 1, lines 31-38).

Although the hash architecture disclosed by Lawler shows substantial features of the claimed invention, it fails to expressly disclose:

a) A compensation directory.

Nevertheless, the method of Merchant teaches:

a) Compensation for overflow by separately storing local heavily used addresses, (col. 8, lines 33-47).

Given the teachings of Merchant, it would have been obvious to one of ordinary skill in the art to modify the teachings of Lawler to show simultaneously using a compensation index to lookup a compensation directory, and cause the compensation directory to output an associated address for indexing the address lookup table and cause the address lookup table to output an associated output port for forwarding the incoming packet. This would enhance the teachings of Lawler by showing a means for improving hit rate, and solving problems such as collision, and overflow during the network address learning process, Merchant, col. 12, lines 36-54.

11. In considering claim 9, Merchant teaches the compensation directory storing data from the address lookup table when an overflow occurs while the address lookup table is performing network address learning. See col. 12, lines 36-54. The motivation to combine Merchant with Lawler would be the same as that indicated in consideration of claim 8.

12. In considering claim 10, Lawler further teaches the method of looking up an address lookup table to comprise: building a validity table according to valid bit information of each directory entry of a set in the address lookup table, continuously

searching and translating each entry of the validity table into a predetermined format for comparison, and selecting a local best-fit directory entry from each comparison result of the searching and translating step. See Lawler, col. 5, lines 14-57. Although, Lawler does not expressly disclose storing a local best-fit directory entry to provide for the compensation directory, combined with Merchant, it would have been obvious to a person of ordinary skill in the art to modify Lawler to teach storing a local best-fit directory entry to provide for the compensation directory. The motivation to combine Lawler and Merchant would be the same as that indicated in consideration of claim 8.

13. In considering claim 11, Merchant teaches the compensation directory performing an aging out process. See col. 9, lines 20-25. The motivation to combine Merchant with Lawler would be the same as that indicated in consideration of claim 8.

14. In considering claim 12, Lawler provides a means for directly deleting any directory entry of the address lookup table when the directory entry is time-out and not recorded in the compensation directory. See col. 4, lines 34-44. Combined with the teachings of Merchant, as indicated in consideration of claim 11, the combined teachings of Lawler and Merchant further provide a means for deleting any directory entry in the compensation directory when the directory entry is time-out and recorded in the compensation directory. The motivation to combine Merchant with Lawler would be the same as that indicated in consideration of claim 8.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lawler et al., U.S. Patent 5,978,951 discloses a hash architecture and method for network address lookup.

Merchant et al., U.S. Patent 6,732,184 discloses an address table overflow management system.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hassan Phillips whose telephone number is (703) 305-8760. The examiner can normally be reached on M-F 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (703) 305-4792. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FRANTZ B. JEAN
PRIMARY EXAMINER